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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,040	09/25/2006	Hideyuki Wada	Q96670	8971
23373 7590 08/07/2009 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
EXAMINER MUNOZ, ANDRES F				
ART UNIT		PAPER NUMBER		
4148				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/594,040

Applicant(s)

WADA ET AL.

Examiner

Andres Munoz

Art Unit

4148

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2009.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-13 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 25 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-85/86)
Paper No(s)/Mail Date 20060925, 20070423
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 10 is objected to because of the following informalities: "said exposed wiring portion" in lines 13-14 lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanaoka et al. (hereinafter "Hanaoka", US PGPub 2002/0030245 A1).

Regarding claim 1, Hanaoka discloses a through wiring board provided with a through wiring in a through hole which is formed through a board, said through wiring board comprising: the through hole (4) opened through said board (6); a through extension wiring (8) with which said through hole is filled and which is formed on one surface of said through wiring board (outside of hole 4 and towards element 20) to extend (as wire 18) to a position at a predetermined distance (towards element 20) from said through hole; and a bump (24) having a conductivity, formed on said through extension wiring and located in a position (around element 20 as wire 18) other than the position where said through hole is opened (Fig. 1, [0122-0123]).

Regarding claim 2, Hanaoka discloses an insulating layer (10) is provided between said board (6) and at least said through wiring (8) and said through extension wiring (18) (Figs. 1 & 7B, [0122-0123], [0149]).

Regarding claim 3, Hanaoka discloses a through extension wiring (8) with which said through hole is filled in the other surface (opposite to surface where bump of claim 1 is disposed) of said through wiring board and which is formed on the other surface of said through wiring board to extend (towards bump 80) to a position at a predetermined distance from said through hole; and a bump (80) having a conductivity, formed on said through extension wiring and located in a position other than the position where said through hole is opened (Fig. 13, [0200]. The examiner interprets the "other surface of...through wiring board" as that one opposite to the surface where first bump is formed.)

Regarding claim 4, Hanaoka discloses a through wiring board provided with a through wiring in a through hole which is formed through a board, said through wiring board comprising the through hole (4) opened through said board (6); an insulating resin layer (40) formed on the surface of said through wiring board (outside of hole 4 and towards element 20) except for the area where said through hole is opened in at least one surface of said through wiring board; a through extension wiring (8) with which said through hole is filled and which is formed on said insulating resin layer on said one surface of said through wiring board to extend to a position at a predetermined distance (towards element 20) from said through hole; and a bump (24) having a conductivity, formed on said through extension wiring and located in a position other than the position where said through hole is opened (Figs. 1, 7A, [0122-0123], [0144]).

Regarding claim 5, Hanaoka discloses a method of manufacturing a through wiring board provided with a through wiring in a through hole which is formed through a board, said method comprising: a step of forming the through hole (4) opened through said board (6); a step of forming a through extension wiring (8) on one surface of said through wiring board to fill said through hole and extend to a position at a predetermined distance (towards element 20) from said through hole, and a step of forming a bump (24) having a conductivity on said through extension wiring in a position other than the position where said through hole is opened (Figs. 1, 7A, 9C & 10C, [0122-0123], [0147], [0158], [0173]).

Regarding claim 6, Hanaoka discloses a method of manufacturing a through wiring board provided with a through wiring in a through hole which is formed through a

board, said method comprising a step of forming the through hole (4) opened through said board (6); a step of forming an insulating resin layer (40) on the surface of said through wiring board (outside of hole 4 and towards element 20) except for the area where said through hole is opened in at least one surface of said through wiring board; a step of forming a through extension wiring (8) on one surface of said insulating resin layer to fill said through hole and extend to a position at a predetermined distance (towards element 20) from said through hole; and a step of forming a bump (24) having a conductivity on said through extension wiring in a position other than the position where said through hole is opened (Figs. 1, 7A, 9C & 10C, [0122-0123], [0144], [0147], [0158], [0173]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 7-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanaoka in view of Wood et al. (hereinafter "Wood", US PGPub 2004/0207081 A1).

Regarding claim 7, Hanaoka discloses a through wiring board provided with a through wiring in a through hole which is formed through a board, said through wiring board comprising: the through hole (4) opened through said board (6); a through wiring (8) formed in said through hole; a reroute wiring (18) which is formed in at least one

surface of said through wiring board to extend on said one surface of said through wiring board to a position at a predetermined distance (towards element 20) from said exposed wiring portion; and a bump (24) having a conductivity, formed on said reroute wiring and located in a position other than the position (around element 20 as wire 18) where said reroute wiring of said through wiring is formed (Fig. 1, [0122-0123]).

Hanaoka does not disclose "a reroute wiring which comes in contact with an exposed wiring portion of said through wiring".

Wood discloses a reroute wiring (42B) which comes in contact with an exposed wiring portion of said through wiring (38B) (Figs. 2E & 3B, [0055], [0070]. Wood discloses the use of a reroute wiring that comes into contact with a trough wiring formed in a through hole and that extends into a direction from the through hole and where a bump is formed in such direction extending from the through hole.).

At the time of the invention, it would have been obvious to modify the reroute wiring of Hanaoka with the reroute wiring as taught by Wood, so as to re-distribute electrical connections and provide alternatives for testing and selectively address active circuitry (Wood – [0055], [0070]).

Regarding claim 8, Hanaoka discloses an insulating layer (10) is provided between said board (6) and at least said through wiring (8) and said reroute wiring (18) (Figs. 1 & 7B, [0122-0123], [0149]).

Regarding claim 9, Hanaoka discloses a reroute wiring (18) in the other surface (opposite to surface where bump of claim 1 is disposed) of said through wiring board and which is formed on the other surface of said through wiring board to extend

(towards bump 80) to a position at a predetermined distance from said exposed wiring portion; and a bump (80) having a conductivity, formed on said reroute wiring and located in a position other than the position where said exposed wiring portion of said through wiring is formed (Fig. 13, [0200]. The examiner interprets the "other surface of...through wiring board" as that one opposite to the surface where first bump is formed.).

Hanaoka does not disclose, as stated in claim 7, "a reroute wiring which comes in contact with an exposed wiring portion of said through wiring".

Wood discloses a reroute wiring (42B) which comes in contact with an exposed wiring portion of said through wiring (38B) (Figs. 2E & 3B, [0055], [0070]. Wood discloses the use of a reroute wiring that comes into contact with a trough wiring formed in a through hole and that extends into a direction from the through hole and where a bump is formed in such direction extending from the through hole.).

At the time of the invention, it would have been obvious to modify the reroute wiring of Hanaoka with the reroute wiring as taught by Wood, so as to re-distribute electrical connections and provide alternatives for testing and selectively address active circuitry (Wood – [0055], [0070]).

Regarding claim 10, Hanaoka discloses a through wiring board provided with a through wiring in a through hole which is formed through a board, said through wiring board comprising: the through hole (4) opened through said board (6); and a through wiring (8) formed in said through hole; an insulating resin layer (40) formed on the surface of said through wiring board (outside of hole 4 and towards element 20) except

for the area where said exposed wiring portion is located in at least one surface of said through wiring board; a reroute wiring (18) and which is formed on said insulating resin layer in at least one surface of said through wiring board to extend to a position at a predetermined distance (towards element 20) from said exposed wiring portion; and a bump (24) having a conductivity, formed on said reroute wiring and located in a position other than the position where said exposed wiring portion is formed (Figs. 1, 7A, [0122-0123], [0144]).

Hanaoka does not disclose "a reroute wiring which comes in contact with an exposed wiring portion of said through wiring".

Wood discloses a reroute wiring (42B) which comes in contact with an exposed wiring portion of said through wiring (38B) (Figs. 2E & 3B, [0055], [0070]. Wood discloses the use of a reroute wiring that comes into contact with a trough wiring formed in a through hole and that extends into a direction from the through hole and where a bump is formed in such direction extending from the through hole.).

At the time of the invention, it would have been obvious to modify the reroute wiring of Hanaoka with the reroute wiring as taught by Wood, so as to re-distribute electrical connections and provide alternatives for testing and selectively address active circuitry (Wood – [0055], [0070]).

Regarding claim 11, Hanaoka discloses there is a protrusion (20) made of an insulating resin (70, [0157]) on said insulating resin layer (40) formed on the surface of said through wiring board except for the area where said exposed wiring portion is located, wherein said reroute wiring is formed in order to cover (depicted as element 14)

said protrusion, and wherein the bump (24) having the conductivity is formed on said reroute wiring which is formed on the upper surface of said protrusion (Figs. 1, 7A & 10C, [0122-0123], [0144], [0173]).

Regarding claim 12, Hanaoka discloses a method of manufacturing a through wiring board provided with a through wiring in a through hole which is formed through a board, said method comprising a step of forming a through wiring (8) in the through hole (4) opened through said board (6); a step of forming a reroute wiring (18) in at least one surface of said through wiring board in order to extend to a position at a predetermined distance (towards element 20) from said exposed wiring portion; and a step of forming a bump (24) having a conductivity on said through extension wiring in a position other than the position where said through hole is opened (Figs. 1, 7A, 9C & 10C, [0122-0123], [0147], [0158], [0173]).

Hanaoka does not disclose "forming a reroute wiring in at least one surface of said through wiring board in order to come in contact with an exposed wiring portion of said through wiring".

Wood discloses a forming a reroute wiring (42B) in at least one surface of said through wiring board (16B) in order to come in contact with an exposed wiring portion of said through wiring (38B) (Figs. 2E & 3B, [0055], [0070]. Wood discloses the use of a reroute wiring that comes into contact with a trough wiring formed in a through hole and that extends into a direction from the through hole and where a bump is formed in such direction extending from the through hole.).

At the time of the invention, it would have been obvious to modify the reroute wiring of Hanaoka with the reroute wiring as taught by Wood, so as to re-distribute electrical connections and provide alternatives for testing and selectively address active circuitry (Wood – [0055], [0070]).

Regarding claim 13, Hanaoka discloses a method of manufacturing a through wiring board provided with a through wiring in a through hole which is formed through a board, said method comprising a step of forming a through wiring (8) in the through hole (4) opened through said board (6); a step of forming an insulating resin layer (40) on the surface of said through wiring board (outside of hole 4 and towards element 20) except for the area where said exposed wiring portion is located in at least one surface of said through wiring board; a step of forming a reroute wiring (18) in at least one surface of said through wiring board in order to extend on said insulating resin layer to a position at a predetermined distance (towards element 20) from said exposed wiring portion; and a step of forming a bump (24) having a conductivity on said through extension wiring in a position other than the position where said through hole is opened (Figs. 1, 7A, 9C & 10C, [0122-0123], [0144], [0147], [0158], [0173]).

Hanaoka does not disclose “forming a reroute wiring in at least one surface of said through wiring board in order to come in contact with an exposed wiring portion of said through wiring”.

Wood discloses a forming a reroute wiring (42B) in at least one surface of said through wiring board (16B) in order to come in contact with an exposed wiring portion of said through wiring (38B) (Figs. 2E & 3B, [0055], [0070]). Wood discloses the use of a

reroute wiring that comes into contact with a trough wiring formed in a through hole and that extends into a direction from the through hole and where a bump is formed in such direction extending from the through hole.).

At the time of the invention, it would have been obvious to modify the reroute wiring of Hanaoka with the reroute wiring as taught by Wood, so as to re-distribute electrical connections and provide alternatives for testing and selectively address active circuitry (Wood – [0055], [0070]).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andres Munoz whose telephone number is (571) 270-3346. The examiner can normally be reached on 7:30am - 4:00pm (Mon-Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anh Mai can be reached on (571) 272-1995. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anh T. Mai/
Supervisory Patent Examiner, Art Unit
4148

/Andres Munoz/
Examiner, Art Unit 4148
August 3, 2009